

Algorithms for Parallel Processing. Edited by Michael T. Heath, Abhiram Ranade and Robert S. Schreiber. Springer-Verlag, New York. (1999). 366 pages. \$69.95, DM 129.00, öS 942.00, sFr 117.50, GBP 49.50.

Contents:

Foreword. Preface.

Models and mechanisms in parallel computation. A general-purpose shared-memory model for parallel computation (Vijaya Ramachandran). Supporting a coherent shared address space across SMP nodes: An application-driven investigation (Angelos Bilas, Liviu Iftode, Rudrajit Samanta and Jaswinder Pal Singh). Single-message vs. batch communication (Mark W. Goudreau and Satish B. Rao). Some simple and practice strategies for parallelism.

Discrete and combinatorial algorithms. Locality in computing connected components (Abhiram Ranade). Routing in optical and wireless networks (Eric J. Schwabe). Transparent parallel transactions on replicated autonomous databases (Rekha Goel and Gautam M. Shroff).

Mathematics of parallelizing compilers. Mathematical tools for loop transformations: From systems of uniform recurrence equations to the polytope model (Alain Darte).

Numerical algorithms. The scalability of mesh improvement algorithms (Lori A. Freitag, Mark T. Jones and Paul E. Plassmann). Data parallel performance optimizations using array aliasing (Y. Charlie Hu and S. Lennart Johnsson). Coarsening, sampling, and smoothing: Elements of the multilevel method (Shang-Hua Teng). Some methods of parallel pseudorandom number generation (Michael Mascagni). Performance of parallel sparse triangular solution (Michael T. Heath and Padma Raghavan). Determining an out-of-core FFT decomposition strategy for parallel disks by dynamic programming (Thomas H. Cormen).

Parallel computer systems and software. Enabling department-scale supercomputing (David S. Greenberg, William E. Hart and Cynthia A. Phillips). Providing uniform dynamic access to numerical software (Henri Casanova and Jack Dongarra).

Continuous Selections of Multivalued Mappings. By Dušan Repovš and Pavel Vladimirovič Semenov. Kluwer Academic Publishers, Dordrecht. (1998). 356 pages. \$159.00, NLG 295.00, GBP 99.00.

Contents:

Preface. A. Theory. 0. Preliminaries. 1. Convex-valued selection theory. 2. Zero-dimensional selection theorem. 3. Relations between zero-dimensional and convex-valued selection theorems. 4. Compact-valued selection theorem. 5. Finite-dimensional selection theorem. 6. Examples and counterexamples. 7. Addendum: New proof of finite-dimensional selection theorem. B. Results. 1. Characterization of normality-type properties. 2. Unified selection theorems. 3. Selection theorems for non-lower semicontinuous mappings. 4. Selection theorems for nonconvex-valued maps. 5. Miscellaneous results. 6. Measurable selections. C. Applications. 1. First applications. 2. Regular mappings and locally trivial fibrations. 3. Fixed-point theorems. 4. Homeomorphism group problem. 5. Soft mappings. 6. Metric projections. 7. Differential inclusions. References. Subject index.

Quantum Measures and Spaces. By G. Kalmbach. Kluwer Academic Publishers, Dordrecht. (1998). 343 pages. \$159.00, NLG 295.00, GBP 99.00.

Contents:

Preface. I. Measures, orthomodularity and inner products. 1. Introduction. 2. Orthomodular measures. 3. Gleason's theorem. 4. Gleason's theorem in applications (A. Dvurečenskij). 5. Inner products. II. Matrix operators and particles. 6. Manifolds, matrices and Lie structures. 7. CC-springs. 8. Spins. 9. Gravitons and 4D-bags. III. Orthomodular structures. 10. Complete structures. 11. Dimension theory. 12. Measures on complete structures. 13. Coordinations. 14. The Kakutani-Mackey theorem. 15. Keller spaces. 16. Orthomodular spaces. IV. Miscellaneous. 17. About the 3-sphere. 18. The spectral theorem (A. Hermann). 19. Topology. 20. Strong and weak topologies (P. Hitzler). 21. D -algebras, D -posets and effect algebras. V. Appendix. A. Anti-automorphisms. B. Boolean logic. C. Groups and general algebras. D. 6-roll mill. E. Sets. F. Relativistic quantum mechanics. Bibliography. Articles. Books. Index.

Euler: The Master of Us All. By William Dunham. Mathematical Association of America. (1999). 185 pages. \$29.95.

Contents:

Acknowledgments. Preface. Biographical sketch. 1. Euler and number theory. 2. Euler and logarithms. 3. Euler and infinite series. 4. Euler and analytic number theory. 5. Euler and complex variables. 6. Euler and algebra. 7. Euler and geometry. 8. Euler and combinatorics. Conclusion. Appendix. Euler's *Opera Omnia*. Index.

Descriptive Complexity. By Neil Immerman. Springer-Verlag, New York. (1999). 268 pages. \$54.95, DM 99.00, öS 723.00, sFr 90.50, GBP 38.00.

Contents:

Preface. Introduction. 1. Background in logic. 2. Background in complexity. 3. First-order reductions. 4. Inductive definitions. 5. Parallelism. 6. Ehrenfeucht-Fraïssé games. 7. Second-order logic and Fagin's theorem. 8. Second-order lower bounds. 9. Complementarity and transitive closure. 10. Polynomial space. 11. Uniformity and precomputation. 12. The role of ordering. 13. Lower bounds. 14. Applications. 15. Conclusions and future directions. References. Index.